

Abstract

5 A process is described for generating hydrogen through the oxidation of fuels that contain
chemically bound hydrogen, in particular hydrocarbons, having the following process
steps: a) introducing the fuel (1) as well as the oxidation agent (2) into a reactor (3)
having a porous material (4') that is embodied in such a way that flame propagation in a
direction opposite the direction of flow is prevented, and b) reacting the fuel with the
oxidation agent in partial oxidation so that hydrogen is obtained in gaseous form. In
10 addition, an apparatus for generating hydrogen that has a reactor that contains a porous
material (4, 4'), and the reactor (3) is embodied as a tubular reactor that has a central
chamber (5) to introduce the fuel and the oxidation agent that extends in the axial
direction and is delimited radially toward the outside by a first wall that has porous
material (4), and the first wall is delimited radially toward the outside by a second wall
15 that contains the porous material (4'). Also described is an apparatus to generate
hydrogen that has a reactor that contains a porous material and is characterized by the
fact that its porosity in the direction of flame generation changes so that the pores are
larger, that the porous material is disposed in a first zone and a second zone, which zones
are adjacent to each other, and that a zone that has a porous material follows the one
20 zone, seen in the direction of flow.

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